soldier. Considerably more latitude is required in the selection of foods which may tempt the appetite of the soldier, if ill in bed. The realization of these facts led to another request from the Red Cross for a ration to be known as the Invalid Ration. This was designed in the first instance for American prisoners in Germany too ill to be out of bed, but it has been thought that the same ration could be used also by sick soldiers in our own hospitals in this country. This ration therefore has been constructed with the idea that it could be used by sick soldiers anywhere in our own service, or in the prison camp. The ration has been approved by the President and adopted. It follows: unpolished rice, yellow cornmeal, sugar, potted chicken, Julienne or compressed soup tablets, dried milk powder of malted milk, beef extract, minute tapioca or other form of prepared pudding crackers, tea, milk chocolate, marmalade, fresh fruit or fruit juice. These articles, however, are regarded as only supplementary to those of the regular ration, whether prisoners' ration or the garrison ration.

It is comforting just now to remember that the status of the science of nutrition in America is fully equal to its status in the land of our enemies at the beginning of the war. If we fail in the trial that is upon us, it will not be for lack of information. If we fail to keep our civilian population properly nourished, it will not be because we do not know the functions of food, or because we do not know what foods are suitable. Likewise with the army.

Our own government has been foremost in the support of scientific investigations along these lines. The names of Atwater, Chittenden, Lusk, Benedict, Mendel, Osborne, Taylor, McCollum, Alsberg, Armsby are known wherever the science of nutrition is studied, and the completeness of their work is openly admired and envied in England, France, Scandinavia, and even in Germany. Immediately preceding the outbreak of the war, no less than a dozen young German investigators of promise had studied in American laboratories, because the work of several of these laboratories was considerably in advance of similar laboratories in Germany or Austria. The support of these laboratories by the national government, by state governments, and by our wealthy benefactors, Carnegie, Rockefeller, Mrs. Sage and others was responsible for their splendid equipment. But the leadership also was not lacking. In fact, the scientific leadership pointed the way to the benefactions and governmental appropriations.

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ICELAND SPAR IN MONTANA

The existence of large deposits of pure calcite has recently been brought to the attention of the Bureau of Mines. These deposits occur near Gray Cliff, Montana, and have been inspected by Dr. S. C. Lind, of the Bureau. At the present time there is no considerable market for pure calcite. It is used for the manufacture of some kinds of glass. Perfect crystals of calcite are used in certain optical instruments. In the past practically all the optical material has been mined from one deposit in Iceland. The crystals from the Montana deposit appear to be the nearest approach to Iceland spar yet uncovered in any part of the world.

Since the seventeenth century science requirements for optically perfect calcite have been supplied almost wholly from the well-known but small deposit on the east coast of Iceland. This is a very remarkable occurrence, consisting of a cavity in basalt completely filled with enormous crystals of pure calcite. Rhombohedrons and scalenohehedrons with diameters as great as three feet have not been uncommon. In recent years, however, the

difficulty in securing first class spar from the Iceland deposit has steadily increased, much of the material taken out being useless for optical purposes.

Occasional finds of doubly refracting spar have been made elsewhere without resulting in the development of a new supply.

While the total amount of spar required is not great, the maintenance of a certain production is necessary for the manufacture of Nicols prisms to be used in dichroscopes for testing pleochroism of gem stones, polariscopes, polarizing microscopes and saccharimeters. Other substances having as great a difference in the refractive indices of the ordinary and extraordinary rays are all unsuitable for replacing Iceland spar in optical instruments.

It is possible that the Montana veins might be made to return a commercial product of spar if they were worked with sufficient care. From one vein six hundred pounds of crystals are said to have been shipped to an agent who sold the spar in Germany, receiving $3,000 therefor. These crystals had been sorted from thirty to forty tons of calcite blasted out in the sinking of a seventy-five-foot shaft.

The Montana deposit lies in two vertical veins in gneiss. The veins are four to seven feet wide, probably at least 100 feet deep, and are several miles long. The deposits are near the surface, easily mined, and quite accessible to the railroad. The crystals practically fill the entire vein without any admixture of foreign intrusions.

So far, no absolutely perfect crystals have been obtained from these veins, but it is altogether likely that a better product may be had by more careful mining. The imperfections are of two kinds. Some crystals have a very slight, gray cloudiness, which renders them unsuitable for optical purposes. This defect is inherent. The bulk of the material, however, while perfectly clear shows slight cleavage in the interior of the crystals. This may be and probably is due to the shocks to which the crystals are subjected in mining.

Some of the crystals were obtained by the Bureau of Mines and submitted to the Bureau of Standards for test. Their report is quoted below.

> The larger sample does show interference colors in places in its body as noted by ————. We are not, however, of the opinion that this renders the whole crystal useless for optical purposes. It would appear that good material for small optical parts (*e. g.*, small Nicols prisms) might be cut from this crystal.
>
> It is also true that the smaller sample is very slightly turbid (milky). This makes it not strictly first class, but for some purposes would not impair its use. Otherwise it is an exquisite sample. We would like to have for our own use a considerable supply of material.

If a market could be developed for pure calcite to pay for mining a large tonnage of these deposits, it appears altogether probable that good optical crystals could be obtained as a by-product in quantity sufficient for all scientific requirements, and so meet the need caused by the diminishing output from Iceland.

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BUREAU OF MINES,
WASHINGTON

SCIENTIFIC EVENTS

INVENTIONS SECTION OF THE GENERAL STAFF OF THE DEPARTMENT OF WAR

THE following statement is authorized by the War Department:

In order to secure prompt and thorough investigation of inventions submitted to the War Department an "Inventions Section" has been created as an agency within the General Staff. All inventions of a mechanical, electrical, or chemical nature submitted to the War Department for inspection, test, or sale are now considered by this section.

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